

CLAIMS

1. A method of identification, in a succession of acquired images (A_t , A_{t+1}) each formed from a matrix of pixels to a first format, of a following sub-image (SA_{t+1}) extracted from a following acquired image (A_{t+1}) corresponding to a prior sub-image (SA_t) extracted from a prior acquired image (A_t), said sub-images (SA_t , SA_{t+1}) being formed from a matrix of
5 pixels to a second format smaller than the first format, the method comprising the steps consisting of:
 - calculating, for the prior sub-image (A_t), at least one distribution (SH_t^h , SH_t^v) of a characteristic quantity of each pixel for blocks forming a predefined partitioning of the sub-image;
 - 10 - calculating the same distribution for at least two would-be sub-images of the second format extracted from the following acquired image (A_{t+1}); and
 - determining the corresponding following sub-image (SA_{t+1}) from among the would-be sub-images, as the sub-image where the or each calculated distribution has the highest correlation with the same calculated distribution for the prior sub-image (SA_t)
 - 15 according to a predefined correlation law.
2. A method as claimed in Claim 1, characterized in that it comprises the steps of:
 - calculating an extended distribution (H_{t+1}^h , H_{t+1}^v) for an extended range of the
20 following acquired image (A_{t+1});
 - calculating the correlations between the calculated distribution for the prior sub-image (A_t) and a corresponding portion of the extended distribution (H_{t+1}^h , H_{t+1}^v) for several shifts of the prior sub-image (SA_t) with respect to the following acquired image (A_{t+1}); and
 - 25 - determining the corresponding following sub-image (SA_{t+1}) as the sub-image of the following acquired image (A_{t+1}) corresponding to the shift (m) of the prior sub-image

(SA_t) with respect to the following acquired image (A_{t+1}) for which the calculated correlation between the distributions is the highest.

3. A method as claimed in Claim 1 or 2, characterized in that the blocks forming a predefined partitioning of the sub-image for calculating at least one distribution are lines and/or columns of the sub-image.

5 4. A method as claimed in any one of the preceding claims, characterized in that said characteristic quantity of each pixel is a parameter chosen from the group consisting of luminance, blue chrominance, red chrominance, red component, green component and blue component.

10 5. A method as claimed in any one of the preceding claims, characterized in that the correlation law is defined as the inverse of the Euclidean distance separating two distributions.

6. A method of determining the movement, in a succession of acquired images
15 each formed from a matrix of pixels to a first format, of a following sub-image (SA_{t+1}) extracted from a following acquired image (A_{t+1}) with respect to a corresponding prior sub-image (SA_t) extracted from a prior acquired image (A_t), said sub-images (SA_t, SA_{t+1}) being formed from a matrix of pixels to a second format smaller than the first format, the method comprising the steps consisting of:

20 - identifying, in the following acquired image (A_{t+1}), the following sub-image (SA_{t+1}) corresponding to the prior sub-image (SA_t) by the use of a method as claimed in any one of the preceding claims; and
- calculating any movement between the prior and following sub-images from the position of the prior (SA_t) and following (SA_{t+1}) sub-images in the prior (A_t) and
25 following (A_{t+1}) acquired images.

7. A method of stabilizing images in a succession of acquired images each formed from a matrix of pixels to a first format, comprising the steps consisting of:

- determining any movement in the succession of acquired images of a
30 following sub-image (SA_{t+1}) issuing from a following acquired image (A_{t+1}) with respect to a

corresponding prior sub-image (SA_t) issuing from a prior acquired image (A_t), by the use of a movement method as claimed in Claim 6;

- correcting said determined movement in order to take account of the effect of an intentional movement and to eliminate the effect of an unintentional movement; and

5 - adopting as the following image (SA_{t+1}) a sub-image of the following acquired image (A_{t+1}) shifted from the prior sub-image (SA_t) by said corrected movement.

8. A computer program product for a data processing unit, comprising a set of instructions for executing steps of the method as claimed in any one of the preceding claims,
10 when said program is executed by a data processing unit.

9. A device for identification, in a succession of acquired images (A_t, A_{t+1}) each formed from a matrix of pixels to a first format, of a following sub-image (SA_{t+1}) extracted from a following acquired image (A_{t+1}) corresponding to a prior sub-image (SA_t) extracted
15 from a prior acquired image (A_t), said sub-images (SA_t, SA_{t+1}) being formed from a matrix of pixels to a second format smaller than the first format, the device comprising:

- means for calculating, for the prior sub-image (A_t), at least one distribution (SH_t^h, SH_t^v) of a characteristic quantity of each pixel for blocks forming a predefined partitioning of the sub-image;

20 - means for calculating the same distribution for at least two would-be sub-images to the second format extracted from the following acquired image (A_{t+1}); and

- means for determining the corresponding following sub-image (SA_{t+1}) from among the would-be sub-images, as the sub-image where the or each calculated distribution has the highest correlation with the same distribution calculated for the prior sub-image (SA_t)
25 according to a predefined correlation law.

10. A device for determining the movement, in a succession of acquired images each formed from a matrix of pixels to a first format, of a following sub-image (SA_{t+1}) extracted from a following acquired image (A_{t+1}) with respect to a corresponding prior sub-image (SA_t) extracted from a prior acquired image (A_t), said sub-images (SA_t, SA_{t+1}) being
30 formed from a matrix of pixels to a second format smaller than the first format, the device comprising:

- an identification device as claimed in Claim 9 for identifying in the following acquired image (A_{t+1}) the following sub-image (SA_{t+1}) corresponding to the prior sub-image (SA_t); and

5 - means for calculating the movement between the prior and following sub-images from the position of the prior (SA_t) and following (SA_{t+1}) sub-images in the prior (A_t) and following (A_{t+1}) acquired images.

11. A device for stabilizing images in a succession of acquired images each formed from a matrix of pixels to a first format, comprising:

10 - a device for determining the movement as claimed in Claim 10 for determining the movement in the succession of acquired images of a following sub-image (SA_{t+1}) issuing from a following acquired image (A_{t+1}) with respect to a corresponding prior sub-image (SA_t) issuing from a prior acquired image (A_t);

15 - means for correcting said determined movement for taking account of the effect of an intentional movement and eliminating the effect of an unintentional movement; and

20 - means for adopting, as the following sub-image (SA_{t+1}), a sub-image of the following acquired image (A_{t+1}) shifted from the prior sub-image (SA_t) by said corrected movement.